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ABSTRACT

The various approaches to research on teaching extend into notions about teacher change. It is difficult to discern whether researchers select research approaches on the basis of their beliefs about teacher change, or vice-versa. Models of teacher change related to these various approaches to the study of teaching include: 1) changing teacher behaviors, 2) changing the structure of classroom management, 3) understanding and changing teachers' thought processes, and 4) combining methods (2) and (3). Continuing research on teacher change must consider how specific types of research relate to the improvement of teacher performance. (CJ)

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"Research on Teaching and Teacher Change"

As a research manager at the National Institute of Education, I am responsible along with others for funding and managing a program of Research on Teaching. Our unit has the responsibility, among other things, for figuring out, with the help of the field, the areas which should be explored next, as well as the ways in which they should be explored. The phenomenon of interest is the teacher and we primarily focus on the teacher within the context of classrooms as they now exist. The purpose of the research, as with all research at NIE, is to contribute to the improvement of equity and the improvement of practice.

Recently, I have been thinking about the relationships between research on teaching and the improvement of practice. Researchers are being asked to be more and more explicit about that relationship both by practitioners and by NIE. And, after all, the bottom line of school improvement will take place in the classroom, with the teachers' help. So I have thought about various approaches to research on teaching and their logical extensions into notions of teacher change. This is easier for some research approaches than for others. It turns out that this analytic exercise has an empirical reality in the form of a set of beliefs about why, how, and probably more importantly whether teachers should change. These beliefs are tied closely to the research paradigms. If this sounds circular, it is. It is difficult to figure out whether individuals hold beliefs about teacher change, and select research approaches on the basis of those beliefs, or vice-versa. These different notions of teacher change will probably cause more conflict and tension among their advocates than have the various approaches to the study of teaching.

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Three more or less pure models of teacher change emerge from this analysis, in addition to one model which is a combination of two of the three. These are not the only models of change: they are models which are related to the various approaches to the study of teaching which Lee Shulman just described.

1. Changing Teachers by Changing Their Behaviors. This notion of change emenates directly from the process/product paradigm which was described by both Shulman and Gage in some detail. This is probably the most straightforward and conceptually linear relationship between a research on teaching paradigm and notions of teacher change, because the criterion of effectiveness is right up front. We know what effects the researchers think teachers should have on the pupils. In this sense, the process/product paradigm is a prescriptive, or improvement model, rather than a descriptive one. After it has been determined what behaviors are related to the criterion of interest - in most cases, students' basic skills test scores - the change model is one of informing or providing workshops to inform other teachers of those effective behaviors.

Now, there are several conditions that are probably necessary if a teacher training treatment, designed on the basis of process/product research, is going to work.

a) The teachers who are to change have the same goals as those outcomes in the research, are clear and unambiguous about those goals, and do not also have other, possibly competing goals. In the case of most of the process/product research to date, this means that the teachers in the treatment program are primarily interested in basic skills achievement outcomes, or to be more exact, in increasing their students' scores on achievement tests.

They should probably not have as a goal the development of independent learning styles through an instructional approach of student choice, nor should they be interested merely in filling in time and getting through the day/month/year. One of the most important aspects of the various experimental programs which Gage just described, then, is that teachers volunteered after hearing about the program.

b) The behaviors to be changed are primarily under the teachers' control. This is a straightforward assumption that is often ignored in in-service training in many occupations. In the case of the four experiments described by Gage, the behaviors were related to the management of classroom resources such as time. If most of the disruptions in a classroom are caused by outside sources, and if high student mobility causes in-migration of new students who have to be socialized, etc., a course in management of time may not be helpful - even if the teachers have the same goals as the workshop leader. This may be an explanation for Gage and Coladarcci's findings - the one experimental program that didn't work. This experiment took place in a low-income urban school at the point that the passage of Proposition 13 was beginning to be felt. It is difficult to know how much in control the teachers were, or felt they were.

2. Change the Structure to Change the Teacher. This view of change comes from the pursuit of the understanding of how attitudes, cultures, organizations, architecture, etc. affect human behavior. In the case of research on teaching, we find that ethnographers, ecological psycholigists, some sociologists and even a few educational psychologists are pursuing this understanding. This approach is used, for example, to explain why programs based on learning theory are not well implemented in the classroom. Learning

theory is derived from one instructor - one pupil interaction. classroom is a social setting which involves 25 or more students with one or two adults. The structure is different, the demands different, and the teacher, therefore, is compelled to act in different ways from that prescribed from learning theory. The classroom research which is being conducted under this rubric is often descriptive - that is, the primary purpose is to develop an understanding. The classroom, then, is conceived of as a complex environment - and the purpose is to make some sense of the complexity and its effects on behavior. One can understand why the notion of change is not always a dominant feature in this paradigm: the environment is complex, and the aspects which affect individual teacher behavior may be many, and difficult to change. Some of the structural variables may be nonmanipulable. For example, if we find that teacher sense of efficacy - which has been found to be an important factor in the success of successful schools - is related to the community's view of how well or how badly teachers are doing their jobs, it may be very difficult to change those views.

Further, many structuralists feel that even if you change one aspect of the structure, and it affects that one aspect of the behavior you want to change, there will be numerous unanticipated consequences, because changes in one aspect of the ecology could affect all other aspects. The emphasis, then, is on describing to understand the complex interrelationships, rather than on prescribing.

There are those, however, who have experimented with structure to determine how it affects behaviors.

Two examples of classroom experiments of structural change designed to change behavior are Liz Cohen's Team Teaching natural experiment, and Far West Lab's Class Size Project. Liz Cohen's theoretical structure relates coordination and control in a school to the technology of instruction--the greater the positive relationship between the levels of the two, the more effective the school. That is, the more complex the technology--and she refers to such things as individualizing instruction and the use of multiple curricula for the same subject matter--the more tightly the instructional practices should be coordinated and controlled if the school is to be effective. The structural treatment she chose to study was team teaching, which she felt is a structural variable which contributes to coordination and control. Hence, she hypothesized a relationship between the complexity of technology and team teaching. That is, team teaching would be found in schools with complex technologies, and this would increase effectiveness. What she found, though, was that team teaching is extraordinarily time consuming and it seems to create its own set of problems which have an effect on the rest of the system. Individual teams in Cohen's sample never lasted for long, although other teams were often created when the first ones were abandoned.

The second example is the class size study conducted by Far West Lab. The first step was a Gene Glass meta-analysis of class size studies. They found that class size is related to student achievement. The next step was to experimentally reduce class size in two schools - by taking 2 classrooms and dividing them into 3 - in the meddle of the year, and determine what it was that the teachers did differently: that is, determine what effect the change in structure had on change in teacher behavior to account for the apparent increase in achievement. What they found was that while there were some differences - i.e., in time-on-task - the researchers were somewhat disappointed that the teachers did not take more advantage of the smaller class

sizes. An interesting paper by Diana Kyle, which was presented this year at AERA listed a number of structural elements - ranging from a state minimum testing program to the environment of the school - which inhibited major changes on the part of the teachers. So here we find that a structural change did not cause as much change as had been predicted because other elements of the structure inhibited such change from taking place.

3. Change Teachers by Understanding and Changing Teachers' Thought Processes. There are several research on teaching approaches which lead toward this notion of teacher change. One is the ethnomethodological which attempts to describe the ways in which social structures are created by interactive behaviors. This research, which is descriptive, does not assume an a priori criterion of effectiveness, but what might be called unacceptable of inappropriate behavior emerges from the research itself. Much of the data collection effort is on video tape. In this view, the assumption is that many teachers are unaware of their own inappropriate behaviors and Teacher Change, then, comes about by having teachers view theirs and others behaviors and providing them with constructs which they can use to analyse their own behavior. Hopefully, they will adjust it accordingly. "Effective" behaviors are never exactly prescribed in this model, although some of the descriptions imply that certain of these behaviors be nonfunctional. An example would be Fred Erickson's tapes of an Anglo and an Indian teacher teaching Indian children, showing how the teachers differ in their feedback to students. The Indian teacher provided primarily private feedback, the Anglo, public. The dialogue from Erickson indicates that private feedback is given to Indian children in the homes and communities and that differences in culture styles between home and school could be detrimental to the child. An excellent example of a training tape using this method was developed by John Gumperz for BBC where he showed what

it was like for an Asian Indian to interview for a job - indicating the cultural differences in expectations, and the frustrations of both interviewer and interviewee that these differences and ensuing differential behaviors caused. Once again, however, prescriptions as to actual behavior are not given. To the best of my knowledge, research on the effects of this form of teacher education has not been conducted.

A second, more prescriptive approach is related to Shulman's third paradigm. Here, the research attempts to describe the ways teachers or experts think, judge, develop expectations, etc., and their relations to behaviors. The change notion here is that in order to change teachers' behaviors, it is necessary to understand Teachers' theories, belief systems, and how they process information; and to design a change program based on that understanding. One way would be to teach them the ways in which experts or experienced teachers make decisions. Pre and inservice training, then, would be conducted on the basis of either common practices or the best of common practices.

But, of course, delving into peoples' thought processes is a difficult undertaking. Two examples are provided to show the complexity:

A. The CLIPIR project at the IRT was designed to determine the thought processes that expert reading diagnosticians use to diagnose reading problems. The thought was that these processes - if they were determined to be reliable and valid - could be used to train regular classroom teachers how to diagnose reading problems. What they found, however, was that among a group of expert reading diagnosticians, diagnosing an individual case, there was very little interrater reliability, and when diagnosing a like case, there was very little intrarater reliability. So the focus of the study is now

shifting to determine whether the use of a coherent model of reading and learning to read in training reading diagnosticians to read will increase the reliability.

B. The second study, The Conceptions of Reading, also at the Institute for Research on Teaching was built around the popular notion that teachers hold theories of reading and learning to read which govern their behaviors in the classroom. After a really thorough investigation, they found that teachers, in general, do not have coherent theories of Reading and Learning to Read, but their theories are much more related to classroom management than to reading. The project is now attempting to determine the degree to which such structural variables as the curriculum affect teachers' thinking about reading.

Both projects are proceeding under the original theoretical structure and are attempting to determine the determinants of theories reading and learning to read and whether these thinking processes affect classroom behavior.

4. There is a recent trend toward combining the 2nd two notions of change: structural change and teachers' thought processes. Judy Lanier and Robert Floden talk about the enduring problems of the classroom - those problems which don't have perfect solutions because a solution to that problem can create others. An example is dealing with individual students rather than with the group, or with the group rather than the individual. Teacher training, then, becomes among other things, training teachers to understand that changes in one structural element will have consequences for others and that informed judgements must be made. Understandings of consequences can only

be developed through experimentation within the context of a classroom. A similar notion is being developed by Ward and Tikunoff in their Ecological Theory Project, in which the results of their ecological analysis, indicating a lack of relationship between classroom structures, and the goals of their schools, are presented to the teachers. It is then up to the teachers to reassess their goals, and determine whether they want to change goals or structures, or do nothing at all. This, then, places the burden of structural change on the participants who must make informed judgements.

Now in terms of where the conflicts will occur. First, when things don't happen when they should - there is only surprise on the part of the experimenters, not the rest of the community. It is when things do happen as predicted that the conflicts occur. Nate Gage may not have felt it, but the experiments he described have caused a considerable amount of tension, confusion and some anger on the part of researchers who advocate other approaches. Some people ignore the results as trivial, some attempt to find fault with the design, some state that the dependent variables are not these that we are interested in, and some ask about long term results - the teachers probably change initially, but they go back to the same behaviors later on.

If you believe in another model of change, then you have trouble accepting the notion that just telling teachers what to do is going to cause significant change. So there are real ideological differences here.

It is possible, however, to accommodate all four notions of change within the same school and classroom. One could consider that there are very different types of tasks for the teacher, and therefore very different types of information which teachers can use to perform those tasks. There are also different ways of promoting learning and change depending upon what it is to be changed, the type of individual to be changed, the setting, etc. We must, however, keep asking the questions:

1) *How does this type of research relate to potential improvement of practice? and,*
2) *What changes in teachers come about by the various approaches to change them?*